

SECTION 09 91 00
PAINTING

PART 1-GENERAL

1.1 DESCRIPTION

- A. Section specifies field painting.
- B. Section specifies prime coats which may be applied in shop under other sections.
- C. Painting includes shellacs, stains, varnishes, coatings specified, and striping or markers and identity markings.

1.2 RELATED WORK

- A. Section 01 81 13, SUSTAINABLE DESIGN REQUIREMENTS for additional LEED requirements.
- B. Section 01 81 19, INDOOR AIR QUALITY REQUIREMENTS for VOC limit.
- C. Shop prime painting of steel and ferrous metals:
 - 1. Division 05 - METALS.
 - 2. Division 08 - OPENINGS.
 - 3. Division 10 - SPECIALTIES.
 - 4. Division 11 - EQUIPMENT.
 - 5. Division 12 - FURNISHINGS.
 - 6. Division 13 - SPECIAL CONSTRUCTION.
 - 7. Division 14 - CONVEYING EQUIPMENT.
 - 8. Division 21 - FIRE SUPPRESSION.
 - 9. Division 22 - PLUMBING.
 - 10. Division 23 - HEATING, VENTILATION AND AIR-CONDITIONING.
 - 11. Division 26 - ELECTRICAL
 - 12. Division 27 - COMMUNICATIONS.
 - 13. Division 28 - ELECTRONIC SAFETY AND SECURITY.
- D. Type of Finish, Color, and Gloss Level of Finish Coat: Section 09 06 00, SCHEDULE FOR FINISHES.
- E. Asphalt and concrete pavement marking: Section 32 17 23, PAVEMENT MARKINGS.

1.3 PERFORMANCE REQUIREMENTS

- A. "Paint" as used herein means all coating systems materials, including primers, emulsions, enamels, stains, sealers and fillers, and other applied materials whether used as prime, intermediate or finish coats.
- B. Paint exposed surfaces whether or not colors are designated in "schedules," except where natural finish of material is specifically noted as a surface not to be painted. Where items or surfaces are not

specifically mentioned, paint same as adjacent similar materials or areas. If color or finish is not designated, Architect will select these from standard colors available for materials systems specified.

- C. Shop Priming: Unless otherwise specified, shop priming of ferrous metal items is included under various sections for structural steel, miscellaneous metal, hollow metal work, and similar items. Also, for shop-fabricated or factory-built mechanical and electrical equipment.
- D. Pre-Finished Items: Unless otherwise indicated, do not include painting when factory finishing or installer finishing is specified for metal toilet enclosures, acoustic materials, finished mechanical and electrical equipment including light fixtures, and switchgear.
- E. Concealed Surfaces: Unless otherwise indicated, painting is not required on surfaces such as walls or ceilings in concealed areas and generally inaccessible areas, foundation spaces, furred areas, pipe spaces, duct and plumbing shafts.
- F. Finished Metal Surfaces: Metal surfaces of anodized aluminum, stainless steel, chromium plate, copper, bronze and similar finished materials will not require finish painting, unless otherwise indicated.
- G. Operating Parts and Labels: Moving parts of operating units, mechanical and electrical parts, such as valve and damper operators, linkages, sensing devices, motor and fan shafts will not require finish painting, unless otherwise indicated.
- H. Do not paint over any code-required labels such as Underwriters' Laboratories and Factory Mutual, or any equipment identification, performance rating, name, or nomenclature plates.

1.4 REGULATORY REQUIREMENTS/QUALITY ASSURANCE

- A. Paint materials shall conform to the restrictions of the local Environmental and Toxic Control jurisdiction.
 - 1. Volatile Organic Compounds (VOC):
 - a. VOC content of paint materials shall not exceed 10g/l for interior latex paints/primers and 50g/l for exterior latex paints and primers.
 - b. Intent: Reduce the quantity of indoor air contaminants that are odorous or potentially irritating to provide installer and occupant health and comfort.
 - c. Requirement: Meet or exceed VOC limits to comply with United States EPA laws concerning limits on volatile organic compounds (VOC) for the Architectural and Industrial Maintenance (AIM) industry.

- d. Submit Material Safety Data Sheets (MSDS's) for paints, coatings, sealers and other products which are odorous or potentially irritating.
 - e. New VOC Laws In Effect January 1, 2005: By law, painting contractors must use only Ozone Transport Commission (OTC) compliant coatings in their fieldwork in regulated areas beginning January 1, 2005. All coatings sold or used within the regulated areas (including Pennsylvania) must comply with the new VOC limits.
 - f. LEED Requirements: Interior paint shall comply with VOC limits specified in Regulation 8, Rule 51 of the Bay Area Air Quality Management District (415-771-6000) (www.baaqmd.gov).
2. Lead-Base Paint:
- a. Comply with Section 410 of the Lead-Based Paint Poisoning Prevention Act, as amended, and with implementing regulations promulgated by Secretary of Housing and Urban Development.
 - b. Regulations concerning prohibition against use of lead-based paint in federal and federally assisted construction, or rehabilitation of residential structures are set forth in Subpart F, Title 24, Code of Federal Regulations, Department of Housing and Urban Development.
 - c. For lead-paint removal, see Section 02 83 33.13, LEAD-BASED PAINT REMOVAL AND DISPOSAL.
3. Asbestos: Materials shall not contain asbestos.
4. Chromate, Cadmium, Mercury, and Silica: Materials shall not contain zinc-chromate, strontium-chromate, Cadmium, mercury or mercury compounds or free crystalline silica.
5. Human Carcinogens: Materials shall not contain any of the ACGIH-BKLT and ACGHI-DOC confirmed or suspected human carcinogens.
6. Use high performance acrylic paints in place of alkyd paints, where possible.
7. VOC content for solvent-based paints shall not exceed 250g/l and shall not be formulated with more than one percent aromatic hydro carbons by weight.

1.5 DEFINITIONS

- A. General: Standard coating terms defined in ASTM D 16 apply to this Section.
- 1. Flat refers to a lusterless or matte finish with a gloss range below 15 when measured at an 85-degree meter.
 - 2. Eggshell refers to low-sheen finish with a gloss range between 5 and 20 when measured at a 60-degree meter.

3. Satin refers to low-sheen finish with a gloss range between 15 and 35 when measured at a 60-degree meter.
4. Semigloss refers to medium-sheen finish with a gloss range between 30 and 65 when measured at a 60-degree meter.
5. Gloss refers to high-sheen finish with a gloss range more than 65 when measured at a 60-degree meter.

1.6 SUBMITTALS

- A. Submit in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. LEED Submittals:
 1. Credit EQ 4.2: Manufacturer's product data for installation paints and coatings applied on-site and within the vapor barrier, including printed statement of VOC content (in g/L).
- C. Manufacturer's Literature and Data:
 1. Before work is started, or sample panels are prepared, submit manufacturer's literature, indicating brand label, product name and product code as of the date of contract award, will be used to determine compliance with the submittal requirements of this specification. Only one list may be used for the entire contract and each coating system is to be from a single manufacturer. All coats on a particular substrate must be from a single manufacturer.
- D. Sample Panels:
 1. After painters' materials have been approved and before work is started submit sample panels showing each type of finish and color specified.
 2. Panels to show color: Composition board, 100 by 250 by 3 mm (4 inch by 10 inch by 1/8 inch).
 3. Panel to show transparent finishes: Wood of same species and grain pattern as wood approved for use, 100 by 250 by 3 mm (4 inch by 10 inch face by 1/4 inch) thick minimum, and where both flat and edge grain will be exposed, 250 mm (10 inches) long by sufficient size, 50 by 50 mm (2 by 2 inch) minimum or actual wood member to show complete finish.
 4. Attach labels to panel stating the following:
 - a. Manufacturers name and product number of paints used.
 - b. Specification code number specified in Section 09 06 00, SCHEDULE FOR FINISHES.
 - c. Product type and color.
 - d. Name of project.

5. Strips showing not less than 50 mm (2 inch) wide strips of undercoats and 100 mm (4 inch) wide strip of finish coat.

E. Sample of identity markers if used.

F. Manufacturers' Certificates indicating compliance with specified requirements.

G. LEED submittals

1. Credit EQ 4.2: Manufacturer's product data for installation paints and coatings applied on-site and within the vapor barrier, including printed statement of VOC content (in g/L).

- a. Provide VOC data and gallons furnished for each coating.

1.7 DELIVERY AND STORAGE

A. Deliver materials to site in manufacturer's sealed container marked to show following:

1. Name of manufacturer.
2. Product type.
3. Batch number.
4. Instructions for use.
5. Safety precautions.

B. In addition to manufacturer's label, provide a label legibly printed as following:

1. Federal Specification Number, where applicable, and name of material.
2. Surface upon which material is to be applied.
3. If paint or other coating, state coat types; prime, body or finish.

C. Maintain space for storage, and handling of painting materials and equipment in a neat and orderly condition to prevent spontaneous combustion from occurring or igniting adjacent items.

D. Store materials at site at least 24 hours before using, at a temperature between 18 and 30 degrees C (65 and 85 degrees F).

1.8 MOCK-UP PANEL

A. Before starting application of water paint mixtures, apply paint as specified to an area, not to exceed 9 m² (100 ft²), selected by Resident Engineer.

B. Finish and texture approved by Resident Engineer and Architect will be used as a standard of quality for remainder of work.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide PPG Industries, Pittsburgh Paints or comparable products from one of the following:

1. Sherwin-Williams Co.
2. Benjamin Moore and Co.
3. ICI Paint Stores, Inc.
4. Duron Paints and Wallcoverings.

B. LEED Requirements:

1. Provide installation adhesives, sealants, paints, and coatings applied on site and within the vapor barrier, that comply with VOC limits outlined in Division 01 Section "Indoor Air Quality Requirements."

2.2 COLORS AND FINISHES

A. Refer to Finish Schedule/ Legend. If not indicated, provide the following.

1. Colors will be selected by the Architect after award of the Contract.
 - a. Prior to beginning work, Contractor will furnish color selection schedule or chips for surfaces to be painted to the Architect for approval.
 - b. No limitation on quantity of colors selected for use on project. Multiple colors will be used in rooms; no more than 1 color for any one wall, unless noted on drawings, or separated by wood trim such as chair rails.

B. Color pigments: Pure, non-fading, applicable types to suite the substrates and service indicated.

2.3 MATERIALS

A. Materials shown in "Painting Schedule" are the products of PPG Industries, unless otherwise noted.

B. General: Provide best quality grade of various types of coatings as regularly manufactured by acceptable paint materials manufacturers. Materials not displaying manufacturer's identification as a standard, best-grade product will not be acceptable. Provide undercoat paint produced by same manufacturer as finish coats. Use only thinners approved by paint manufacturer, and use only within recommended limits.

C. Previously painted surfaces shall be "scuff-sanded" and shall receive a minimum paint system of 2 finish coats. Spot prime paint repaired areas.

1. Prime paint previously painted surfaces where recommended by paint manufacturer; apply one coat of tinted primer and one finish coat instead of two finish coats.

D. Paint Coordination: Provide finish coats which are compatible with prime paints used. Review other sections of these specifications in which prime paints are to be provided to ensure compatibility of total coatings system for various substrates. Upon request from other trades, furnish information on characteristics of finish materials proposed for use, to ensure compatible prime coats are used. Provide barrier coats over incompatible primers or remove and re-prime as required. Notify Resident Engineer in writing of any anticipated problems using specified coating systems with substrates primed by others.

2.4 PAINT PROPERTIES

- A. Use ready-mixed (including colors), except two component epoxies, polyurethanes, polyesters, paints having metallic powders packaged separately and paints requiring specified additives.
- B. Where no requirements are given in the referenced specifications for primers, use primers with pigment and vehicle, compatible with substrate and finish coats specified.

PART 3 - EXECUTION

3.1 JOB CONDITIONS

- A. Safety: Observe required safety regulations and manufacturer's warning and instructions for storage, handling and application of painting materials.
 1. Take necessary precautions to protect personnel and property from hazards due to falls, injuries, toxic fumes, fire, explosion, or other harm.
 2. Deposit soiled cleaning rags and waste materials in metal containers approved for that purpose. Dispose of such items off the site at end of each days work.
- B. Atmospheric and Surface Conditions:
 1. Do not apply coating when air or substrate conditions are:
 - a. Less than 3 degrees C (5 degrees F) above dew point.
 - b. Below 10 degrees C (50 degrees F) or over 35 degrees C (95 degrees F), unless specifically pre-approved by the Contracting Officer and the product manufacturer. Under no circumstances shall application conditions exceed manufacturer recommendations.
 2. Maintain interior temperatures until paint dries hard.
 3. Do no exterior painting when it is windy and dusty.

4. Do not paint in direct sunlight or on surfaces that the sun will soon warm.
5. Apply only on clean, dry and frost free surfaces except as follows:
 - a. Apply water thinned acrylic and cementitious paints to damp (not wet) surfaces where allowed by manufacturer's printed instructions.
 - b. Dampened with a fine mist of water on hot dry days concrete and masonry surfaces to which water thinned acrylic and cementitious paints are applied to prevent excessive suction and to cool surface.
6. Varnishing:
 - a. Apply in clean areas and in still air.
 - b. Before varnishing vacuum and dust area.
 - c. Immediately before varnishing wipe down surfaces with a tack rag.

3.2 SURFACE PREPARATION

- A. Method of surface preparation is optional, provided results of finish painting produce solid even color and texture specified with no overlays.
- B. General:
 1. Remove prefinished items not to be painted such as lighting fixtures, escutcheon plates, hardware, trim, and similar items for reinstallation after paint is dried.
 2. Remove items for reinstallation and complete painting of such items and adjacent areas when item or adjacent surface is not accessible or finish is different.
 3. See other sections of specifications for specified surface conditions and prime coat.
 4. Clean surfaces for painting with materials and methods compatible with substrate and specified finish. Remove any residue remaining from cleaning agents used. Do not use solvents, acid, or steam on concrete and masonry.
- C. Wood:
 1. Sand to a smooth even surface and then dust off.
 2. Sand surfaces showing raised grain smooth between each coat.
 3. Wipe surface with a tack rag prior to applying finish.
 4. Surface painted with an opaque finish:
 - a. Coat knots, sap and pitch streaks with Knot Sealer before applying paint.
 - b. Apply two coats of Knot Sealer over large knots.
 5. After application of prime or first coat of stain, fill cracks, nail and screw holes, depressions and similar defects with wood filler

paste. Sand the surface to make smooth and finish flush with adjacent surface.

6. Before applying finish coat, reapply wood filler paste if required, and sand surface to remove surface blemishes. Finish flush with adjacent surfaces.
7. Fill open grained wood such as oak, walnut, ash and mahogany with Wood Filler Paste, colored to match wood color.
 - a. Thin filler in accordance with manufacturer's instructions for application.
 - b. Remove excess filler, wipe as clean as possible, dry, and sand as specified.

D. Ferrous Metals:

1. Remove oil, grease, soil, drawing and cutting compounds, flux and other detrimental foreign matter in accordance with SSPC-SP 1 (Solvent Cleaning).
2. Remove loose mill scale, rust, and paint, by hand or power tool cleaning, as defined in SSPC-SP 2 (Hand Tool Cleaning) and SSPC-SP 3 (Power Tool Cleaning). Exception: where high temperature aluminum paint is used, prepare surface in accordance with paint manufacturer's instructions.
3. Fill dents, holes and similar voids and depressions in flat exposed surfaces of hollow steel doors and frames, access panels, roll-up steel doors and similar items specified to have semi-gloss or gloss finish with TT-F-322D (Filler, Two-Component Type, For Dents, Small Holes and Blow-Holes). Finish flush with adjacent surfaces.
 - a. This includes flat head countersunk screws used for permanent anchors.
 - b. Do not fill screws of item intended for removal such as glazing beads.
4. Spot prime abraded and damaged areas in shop prime coat which expose bare metal with same type of paint used for prime coat. Feather edge of spot prime to produce smooth finish coat.
5. Spot prime abraded and damaged areas which expose bare metal of factory finished items with paint as recommended by manufacturer of item.

E. Zinc-Coated (Galvanized) Metal, Aluminum, Copper and Copper Alloys
Surfaces Specified Painted:

1. Clean surfaces to remove grease, oil and other deterrents to paint adhesion in accordance with SSPC-SP 1 (Solvent Cleaning).

2. Spot coat abraded and damaged areas of zinc-coating which expose base metal on hot-dip zinc-coated items with Organic Zinc Rich Coating. Prime or spot prime with Waterborne Galvanized Primer or Non-Cementitious Galvanized Primer depending on finish coat compatibility.

F. Masonry, Concrete, Cement Board, Cement Plaster and Stucco:

1. Clean and remove dust, dirt, oil, grease efflorescence, form release agents, laitance, and other deterrents to paint adhesion.
2. Use emulsion type cleaning agents to remove oil, grease, paint and similar products. Use of solvents, acid, or steam is not permitted.
3. Remove loose mortar in masonry work.
4. Replace mortar and fill open joints, holes, cracks and depressions with new mortar specified in Section 04 05 13, MASONRY MORTARING , Section 04 05 16, MASONRY GROUTING. Do not fill weep holes. Finish to match adjacent surfaces.
5. Neutralize Concrete floors to be painted by washing with a solution of 1.4 Kg (3 pounds) of zinc sulfate crystals to 3.8 L (1 gallon) of water, allow to dry three days and brush thoroughly free of crystals.
6. Repair broken and spalled concrete edges with concrete patching compound to match adjacent surfaces as specified in CONCRETE Sections. Remove projections to level of adjacent surface by grinding or similar methods.

G. Gypsum Board:

1. Remove efflorescence, loose and chalking plaster or finishing materials.
2. Remove dust, dirt, and other deterrents to paint adhesion.
3. Fill holes, cracks, and other depressions with Gypsum (Spackling Compound) finished flush with adjacent surface, with texture to match texture of adjacent surface. Patch holes over 25 mm (1-inch) in diameter as specified in Section for gypsum board.

3.3 PAINT PREPARATION

- A. Thoroughly mix painting materials to ensure uniformity of color, complete dispersion of pigment and uniform composition.
- B. Do not thin unless necessary for application and when finish paint is used for body and prime coats. Use materials and quantities for thinning as specified in manufacturer's printed instructions.
- C. Remove paint skins, then strain paint through commercial paint strainer to remove lumps and other particles.

- D. Mix two component and two part paint and those requiring additives in such a manner as to uniformly blend as specified in manufacturer's printed instructions unless specified otherwise.
- E. For tinting required to produce exact shades specified, use color pigment recommended by the paint manufacturer.

3.4 APPLICATION

- A. Start of surface preparation or painting will be construed as acceptance of the surface as satisfactory for the application of materials.
- B. Unless otherwise specified, apply paint in three coats; prime, body, and finish. When two coats applied to prime coat are the same, first coat applied over primer is body coat and second coat is finish coat.
- C. Apply each coat evenly and cover substrate completely.
- D. Allow not less than 48 hours between applications of succeeding coats, except as allowed by manufacturer's printed instructions, and approved by Resident Engineer.
- E. Finish surfaces to show solid even color, free from runs, lumps, brush marks, laps, holidays, or other defects.
- F. Apply by brush, roller or spray, except as otherwise specified.
- G. Do not spray paint in existing occupied spaces unless approved by Resident Engineer, except in spaces sealed from existing occupied spaces.
 - 1. Apply painting materials specifically required by manufacturer to be applied by spraying.
 - 2. In areas, where paint is applied by spray, mask or enclose with polyethylene, or similar air tight material with edges and seams continuously sealed including items specified in WORK NOT PAINTED, motors, controls, telephone, and electrical equipment, fronts of sterilizes and other recessed equipment and similar prefinished items.
- H. Do not paint in closed position operable items such as access doors and panels, window sashes, overhead doors, and similar items except overhead roll-up doors and shutters.

3.5 PRIME PAINTING

- A. After surface preparation prime surfaces before application of body and finish coats, except as otherwise specified.
- B. Spot prime and apply body coat to damaged and abraded painted surfaces before applying succeeding coats.
- C. Additional field applied prime coats over shop or factory applied prime coats are not required except for exterior exposed steel apply an additional prime coat.

3.6 EXTERIOR FINISHES

A. Apply following finish coats where specified in Section 09 06 00, SCHEDULE FOR FINISHES.

B. Exterior Ferrous Metal: 100 percent acrylic DTM (Direct-To-Metal) Industrial Enamel; 2 finish coats over primer. Satin or gloss as selected by Architect.

NOTE: Scuff-sand shop approved primer or previous painted surface.

1 coat of PPG Pitt Tech Int/Ext Primer 90-712; 100 percent acrylic.

2 coats of PPG Pitt Tech Int./Ext DTM Industrial Enamel; 90-474 Series Satin; 90-374 Series High Gloss; 100 percent acrylic.

NOTE: First coat not required if factory primed - scuff sand factory or previous primer.

NOTE: Architect's option to use gloss or satin sheen at no additional cost.

C. Exterior Galvanized Metal: 100 percent acrylic DTM (Direct-To-Metal) Industrial Enamel; 2 finish coats over primer. Satin or gloss as selected by Architect.

NOTE: Shop Prime Painted Galvanized Metal: Scuff-sand shop approved primer or previous painted surface.

NOTE: Exposed Galvanized Metal: Thoroughly remove all foreign contamination by wiping with suitable solvent. Remove any conversion coatings.

1 coat of PPG Pitt Tech Int/Ext Primer 90-712; 100 percent acrylic.

2 coats of PPG Pitt Tech Int./Ext DTM Industrial Enamel; 90-474 Series Satin; 90-374 Series High Gloss; 100 percent acrylic.

NOTE: First coat not required if factory primed; scuff- sand factory or previous primer.

NOTE: Architect's option to use gloss or satin sheen at no additional cost.

3.7 INTERIOR FINISHES

A. Apply following finish coats over prime coats in spaces or on surfaces specified in Section 09 06 00, SCHEDULE FOR FINISHES.

B. Gypsum Board (Drywall): Eggshell acrylic latex finish; 2 finish coats over primer/sealer. Zero VOC and low odor; Green Seal Certified; anti-microbial paint.

1 coat of PPG Pure Performance Primer 9-900.

2 coats of PPG Pure Performance, eggshell 9-300 Series.

- C. Gypsum Board (Epoxy Finish): Waterborne epoxy finish (semigloss); 2 finish coats over primer required. Dry areas only; moderate environments.
1 coat of PPG Speedhide Quick Drying Latex Primer 6-2.
2 coats of PPG Pitt-Glaze WB Acrylic Epoxy Series 16-551.
- D. Gypsum Board (Metallic Finish): Low odor, low VOC, LEED compliant metallic paint (textured); 2 finish coats over primer required.
1 coat of SCUFFMASTER TINTED UNDERCOAT [Primer/Sealer].
2 coats of SCUFFMASTER ENVIROMETAL.
- E. Interior Ferrous Metal: 100 percent acrylic DTM (Direct-To-Metal) Industrial Enamel; 2 finish coats over primer. Satin or gloss as selected by Architect.
NOTE: Scuff-sand shop approved primer or previous painted surface.
1 coat of PPG Pitt Tech Int/Ext Primer 90-712; for ferrous metal and galvanized steel.
2 coats of PPG Pitt Tech Int./Ext DTM Industrial Enamel; 90-474 Series Satin; 90-374 Series High Gloss.
NOTE: First coat not required if factory primed - scuff-sand factory or previous primer.
NOTE: Architect's option to use gloss or satin sheen at no additional cost.
- F. Interior Ferrous Metal: Eggshell acrylic finish; 2 finish coats over primer. Zero VOC and low odor; Green Seal Certified; anti-microbial paint (topcoat).
1 coat of PPG Pitt-Tech Primer 90-712 (galvanized and non-galvanized metal)
2 coats of PPG Pure Performance, flat 9-100 Series.
2 coats of PPG Pure Performance, eggshell 9-300 series.
NOTE: First coat not required if factory primed. Spot prime abraded areas only with specified primer.
- G. Interior Woodwork (Opaque Finish): Eggshell acrylic finish; 2 finish coats over primer.
1 coat of PPG Seal-Grip Interior Latex Enamel Undercoater 17-955.
2 coats of Eggshell Manor Hall Enamel, 89 line; 100 percent acrylic.
- H. Interior Woodwork (Opaque Finish): Eggshell acrylic finish: 2 finish coats over primer. Zero VOC and low odor; Green Seal Certified; anti-microbial paint (topcoat).
1 coat of PPG Seal-Grip Interior Latex Enamel Undercoater 17-955.
2 coats of PPG Pure Performance, eggshell 9-300 Series.

I. Interior Woodwork (Transparent Finish): Satin finish; minimum 3 finish coats over stain. Provide additional coats of stain, as required, to achieve color as selected by Architect.

1 coat of Olympic Interior Low VOC Oil Stain 44500.

2 coats of Olympic Interior Water Based Polyurethane Gloss 42784.

1 coat of Olympic Interior Water Based Polyurethane Satin 42786.

J. Interior Woodwork (Transparent Finish): Acrylic polyurethane satin finish; minimum 3 finish coats over stain. Provide additional coats of stain, as required, to achieve color as selected by Architect.

1 coat of Olympic Interior Low VOC Oil Stain 44500.

2 coats of Olympic Interior Water Based Polyurethane Gloss 42784.

1 coat of Olympic Interior Water Based Polyurethane Satin 42786.

3.8 MECHANICAL AND ELECTRICAL WORK FIELD PAINTING SCHEDULE

A. Field painting of mechanical and electrical consists of cleaning, touching-up abraded shop prime coats, and applying prime, body and finish coats to materials and equipment if not factory finished in space scheduled to be finished.

B. In spaces not scheduled to be finish painted in Section 09 06 00, SCHEDULE FOR FINISHES paint as specified under paragraph H, colors.

C. Paint various systems specified in Division 02 - EXISTING CONDITIONS, Division 21 - FIRE SUPPRESSION, Division 22 - PLUMBING, Division 23 - HEATING, VENTILATION AND AIR-CONDITIONING, Division 26 - ELECTRICAL, Division 27 - COMMUNICATIONS, and Division 28 - ELECTRONIC SAFETY AND SECURITY.

D. Paint after tests have been completed.

E. Omit prime coat from factory prime-coated items.

F. Finish painting of mechanical and electrical equipment is not required when located in interstitial spaces, above suspended ceilings, in concealed areas such as pipe and electric closets, pipe basements, pipe tunnels, trenches, attics, roof spaces, shafts and furred spaces except on electrical conduit containing feeders 600 volts or more.

G. Omit field painting of items specified in paragraph, Building and Structural WORK NOT PAINTED.

H. Color:

1. Paint items having no color specified in Section 09 06 00, SCHEDULE FOR FINISHES to match surrounding surfaces.

2. Paint colors as specified in Section 09 06 00, SCHEDULE FOR FINISHES except for following:

- a. WhiteExterior unfinished surfaces of enameled plumbing fixtures. Insulation coverings on breeching and uptake inside boiler house, drums and drum-heads, oil heaters, condensate tanks and condensate piping.
- b. Gray:Heating, ventilating, air conditioning and refrigeration equipment (except as required to match surrounding surfaces), and water and sewage treatment equipment and sewage ejection equipment.
- c. Aluminum Color: Ferrous metal on outside of boilers and in connection with boiler settings including supporting doors and door frames and fuel oil burning equipment, and steam generation system (bare piping, fittings, hangers, supports, valves, traps and miscellaneous iron work in contact with pipe).
- d. Federal Safety Red: Exposed fire protection piping hydrants, post indicators, electrical conducts containing fire alarm control wiring, and fire alarm equipment.
- e. Federal Safety Orange: .Entire lengths of electrical conduits containing feeders 600 volts or more.
- f. Color to match brickwork sheet metal covering on breeching outside of exterior wall of boiler house.

I. Apply paint systems on properly prepared and primed surfaces.

3.9 BUILDING AND STRUCTURAL WORK FIELD PAINTING

- A. Painting and finishing of interior and exterior work except as specified under paragraph 3.11 B.
 - 1. Painting and finishing of new work including colors and gloss of finish selected is specified in Finish Schedule, Section 09 06 00, SCHEDULE FOR FINISHES.
 - 2. Painting of disturbed, damaged and repaired or patched surfaces when entire space is not scheduled for complete repainting or refinishing.
 - 3. Painting of ferrous metal and galvanized metal.
 - 4. Painting of wood with fire retardant paint exposed in attics, when used as mechanical equipment space.
 - 5. Identity painting and safety painting.
- B. Building and Structural Work not Painted:
 - 1. Prefinished items:
 - a. Casework, doors, elevator entrances and cabs, metal panels, wall covering, and similar items specified factory finished under other sections.

- b. Factory finished equipment and pre-engineered metal building components such as metal roof and wall panels.
- 2. Finished surfaces:
 - a. Hardware except ferrous metal.
 - b. Anodized aluminum, stainless steel, chromium plating, copper, and brass, except as otherwise specified.
 - c. Signs, fixtures, and other similar items integrally finished.
- 3. Concealed surfaces:
 - a. Inside dumbwaiter, elevator and duct shafts, interstitial spaces, pipe basements, crawl spaces, pipe tunnels, above ceilings, attics, except as otherwise specified.
 - b. Inside walls or other spaces behind access doors or panels.
 - c. Surfaces concealed behind permanently installed casework and equipment.
- 4. Moving and operating parts:
 - a. Shafts, chains, gears, mechanical and electrical operators, linkages, and sprinkler heads, and sensing devices.
 - b. Tracks for overhead or coiling doors, shutters, and grilles.
- 5. Labels:
 - a. Code required label, such as Underwriters Laboratories Inc., Inchcape Testing Services, Inc., or Factory Mutual Research Corporation.
 - b. Identification plates, instruction plates, performance rating, and nomenclature.
- 6. Galvanized metal:
 - a. Exterior chain link fence and gates, corrugated metal areaways, and gratings.
 - b. Gas Storage Racks.
 - c. Except where specifically specified to be painted.
- 7. Metal safety treads and nosings.
- 8. Gaskets.
- 9. Concrete curbs, gutters, pavements, retaining walls, exterior exposed foundations walls and interior walls in pipe basements.
- 10. Face brick.
- 11. Structural steel encased in concrete, masonry, or other enclosure.
- 12. Structural steel to receive sprayed-on fire proofing.
- 13. Ceilings, walls, columns in interstitial spaces.
- 14. Ceilings, walls, and columns in pipe basements.

3.10 IDENTITY PAINTING SCHEDULE

- A. Identify designated service in accordance with ANSI A13.1, unless specified otherwise, on exposed piping, piping above removable ceilings, piping in accessible pipe spaces, interstitial spaces, and piping behind access panels.
1. Legend may be identified using 2.1 G options or by stencil applications.
 2. Apply legends adjacent to changes in direction, on branches, where pipes pass through walls or floors, adjacent to operating accessories such as valves, regulators, strainers and cleanouts a minimum of 12 000 mm (40 feet) apart on straight runs of piping. Identification next to plumbing fixtures is not required.
 3. Locate Legends clearly visible from operating position.
 4. Use arrow to indicate direction of flow.
 5. Identify pipe contents with sufficient additional details such as temperature, pressure, and contents to identify possible hazard. Insert working pressure shown on drawings where asterisk appears for High, Medium, and Low Pressure designations as follows:
 - a. High Pressure - 414 kPa (60 psig) and above.
 - b. Medium Pressure - 104 to 413 kPa (15 to 59 psig).
 - c. Low Pressure - 103 kPa (14 psig) and below.
 - d. Add Fuel oil grade numbers.
 6. Legend name in full or in abbreviated form as follows:

PIPING	COLOR OF EXPOSED PIPING	COLOR OF BACKGROUND	COLOR OF LETTERS	LEGEND ABBREVIATIONS
Blow-off		Yellow	Black	Blow-off
Boiler Feedwater		Yellow	Black	Blr Feed
A/C Condenser Water Supply		Green	White	A/C Cond Wtr Sup
A/C Condenser Water Return		Green	White	A/C Cond Wtr Ret
Chilled Water Supply		Green	White	Ch. Wtr Sup
Chilled Water Return		Green	White	Ch. Wtr Ret
Shop Compressed Air		Yellow	Black	Shop Air
Air-Instrument Controls		Green	White	Air-Inst Cont
Drain Line		Green	White	Drain
Emergency Shower		Green	White	Emg Shower
High Pressure Steam		Yellow	Black	H.P. _____*
High Pressure Condensate Return		Yellow	Black	H.P. Ret _____*
Medium Pressure Steam		Yellow	Black	M. P. Stm _____*

Medium Pressure Condensate Return	Yellow	Black	M.P. Ret _____ *
Low Pressure Steam	Yellow	Black	L.P. Stm _____ *
Low Pressure Condensate Return	Yellow	Black	L.P. Ret _____ *
High Temperature Water Supply	Yellow	Black	H. Temp Wtr Sup
High Temperature Water Return	Yellow	Black	H. Temp Wtr Ret
Hot Water Heating Supply	Yellow	Black	H. W. Htg Sup
Hot Water Heating Return	Yellow	Black	H. W. Htg Ret
Gravity Condensate Return	Yellow	Black	Gravity Cond Ret
Pumped Condensate Return	Yellow	Black	Pumped Cond Ret
Vacuum Condensate Return	Yellow	Black	Vac Cond Ret
Fuel Oil - Grade	Green	White	Fuel Oil-Grade ____ *
Boiler Water Sampling	Yellow	Black	Sample
Chemical Feed	Yellow	Black	Chem Feed
Continuous Blow-Down	Yellow	Black	Cont. B D
Pumped Condensate	Black		Pump Cond
Pump Recirculating	Yellow	Black	Pump-Recirc.
Vent Line	Yellow	Black	Vent
Alkali	Yellow	Black	Alk
Bleach	Yellow	Black	Bleach
Detergent	Yellow	Black	Det
Liquid Supply	Yellow	Black	Liq Sup
Reuse Water	Yellow	Black	Reuse Wtr
Cold Water (Domestic)	White	Green	White
Hot Water (Domestic)			
Supply	White	Yellow	Black
Return	White	Yellow	Black
Tempered Water	White	Yellow	Black
Ice Water			
Supply	White	Green	White
Return	White	Green	White
Reagent Grade Water		Green	White
Reverse Osmosis		Green	White
Sanitary Waste		Green	White
Sanitary Vent		Green	White
Storm Drainage		Green	White
Pump Drainage		Green	White
Chemical Resistant Pipe			
Waste		Yellow	Black

Vent	Yellow	Black	Acid Vent
Atmospheric Vent	Green	White	ATV
Silver Recovery	Green	White	Silver Rec
Oral Evacuation	Green	White	Oral Evac
Fuel Gas	Yellow	Black	Gas
Fire Protection Water			
Sprinkler	Red	White	Auto Spr
Standpipe	Red	White	Stand
Sprinkler	Red	White	Drain
Hot Water Supply Domestic/Solar Water	H.W. Sup Dom/SW		
Hot Water Return Domestic/Solar Water	H.W. Ret Dom/SW		

7. Electrical Conduits containing feeders over 600 volts, paint legends using 50 mm (2 inch) high black numbers and letters, showing the voltage class rating. Provide legends where conduits pass through walls and floors and at maximum 6100 mm (20 foot) intervals in between. Use labels with yellow background with black border and words Danger High Voltage Class, 5000, 15000, 25000.
8. See Sections for methods of identification, legends, and abbreviations of the following:
 - a. Regular compressed air lines: Section 22 15 00, GENERAL SERVICE COMPRESSED-AIR SYSTEMS.
 - b. Dental compressed air lines: Section 22 61 13.74, DENTAL COMPRESSED-AIR PIPING / Section 22 61 19.74, DENTAL COMPRESSED-AIR EQUIPMENT.
 - c. Laboratory gas and vacuum lines: Section 22 62 00, VACUUM SYSTEMS FOR LABORATORY AND HEALTHCARE FACILITIES, Section 22 63 00, GAS SYSTEMS FOR LABORATORY AND HEALTHCARE FACILITIES.
 - d. Oral evacuation lines: Section 22 62 19.74, DENTAL VACUUM AND EVACUATION EQUIPMENT.
 - e. Medical Gases and vacuum lines: Section 22 62 00, VACUUM SYSTEMS FOR LABORATORY AND HEALTHCARE FACILITIES, Section 22 63 00, GAS SYSTEMS FOR LABORATORY AND HEALTHCARE FACILITIES.
 - f. Conduits containing high voltage feeders over 600 volts: Section 26 05 33, RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS, Section 27 05 33, RACEWAYS AND BOXES FOR COMMUNICATIONS SYSTEMS, Section 28 05 33, RACEWAYS AND BOXES FOR ELECTRONIC SAFETY AND SECURITY.

B. Fire and Smoke Partitions:

1. Identify partitions above ceilings on both sides of partitions except within shafts in letters not less than 64 mm (2 1/2 inches) high.

2. Stenciled message: "SMOKE BARRIER" or, "FIRE BARRIER" as applicable.
3. Locate not more than 6100 mm (20 feet) on center on corridor sides of partitions, and with a least one message per room on room side of partition.
4. Use semigloss paint of color that contrasts with color of substrate.
- C. Identify columns in pipe basements and interstitial space:
 1. Apply stenciled number and letters to correspond with grid numbering and lettering shown.
 2. Paint numbers and letters 100 mm (4 inches) high, locate 450 mm (18 inches) below overhead structural slab.
 3. Apply on four sides of interior columns and on inside face only of exterior wall columns.
 4. Color:
 - a. Use black on concrete columns.
 - b. Use white or contrasting color on steel columns.

3.11 PROTECTION CLEAN UP, AND TOUCH-UP

- A. Protect work from paint droppings and spattering by use of masking, drop cloths, removal of items or by other approved methods.
- B. Upon completion, clean paint from hardware, glass and other surfaces and items not required to be painted of paint drops or smears.
- C. Before final inspection, touch-up or refinished in a manner to produce solid even color and finish texture, free from defects in work which was damaged or discolored.

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